UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/800,731	03/16/2004	Jimmy S. Wong	58268.00302	1038

32294 7590 10/30/2007
SQUIRE, SANDERS & DEMPSEY L.L.P.
14TH FLOOR
8000 TOWERS CRESCENT
TYSONS CORNER, VA 22182

EXAMINER	
NGUYEN, ANH NGOC M	
ART UNIT	PAPER NUMBER
4181	

MAIL DATE	DELIVERY MODE
10/30/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/800,731	WONG, JIMMY S.	
	Examiner	Art Unit	
	Anh Ngoc Nguyen	4181	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *16 March 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-18* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-18* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *03/16/2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claim 1 – 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kalkunte et al (US 2003/0118016) in view of Leung (US 6,490,280).

Consider claim 1, Kalkunte discloses a method of replicating multicast datagrams in a network device, said method comprising: determining by a memory management unit whether a scheduled outgoing datagram stored in a main memory is a multicast (MC) packet (see para 0013, para 0035, para 0044, para 0059 and para 0061, where Kalkunte discusses the fabric effectively manages multicast traffic). Kalkunte discloses when the scheduled outgoing datagram type is the MC datagram (see para 0013 and para 0035, where Kalkunte discusses determining whether the packet is a known IP multicast). Kalkunte discloses performing a lookup of a replicate count table to determine a copy count value (see para 0011, where Kalkunte discusses lookup in a forwarding table). Kalkunte discloses writing the copy count value to a copy count register (see para 0078, where Kalkunte discusses each Egress keeps a counter to keep tracks of bytes being sent out). Kalkunte discloses awaiting means for awaiting a ready signal from an egress port of the network switch (see para 0011, para 0013 and para 0037, where Kalkunte discusses the incoming data packet is forwarded based on the egress port

bitmap). Kalkunte discloses sending the outgoing datagram to the egress port from the main memory along with the copy count value (see para 0037, para 0046, para 0078 and para 0131, where Kalkunte discusses forwarding the packet to the egress port and the LLA maintains reference counters). Kalkunte discloses changing the copy count value in the copy count register (see para 0053 - 0054, where Kalkunte discusses the counter is updated). Kalkunte discloses forwarding the outgoing datagram from the egress port (see para 0077 - 0078, where Kalkunte discusses each egress keeps track of how many bytes have been send out for packets that came from other ports).

Kalkunte does not specifically disclose modifying a VLAN identifier of the outgoing datagram. Leung teaches modifying a VLAN tag header that identifies the frame information (see abstract and col. 5 lines 28 - 32, where Leung discusses modifying a VLAN tag).

It would have been obvious to one ordinary skilled in the art at the time the invention was made to modify the invention of Kalkunte, and modify a VLAN tag, as taught by Leung, thus a need to provide a method and mechanism for enabling VLAN tag insertion/stripping/modification as discussed by Leung (see col. 1 lines 50 - 55).

Consider claim 2, Kalkunte discloses a method as recited in claim 1, wherein the method performed by the memory management unit is suspended based on a presence of a higher - priority outgoing datagram (see para 0032, para 0060, and para 0062, where Kalkunte discusses the fabric supports strict priority/priority classes and a PAUSE frame is sent to its link partner to stop the flow of packets).

Consider claim 3, Kalkunte discloses a method as recited in claim 1, further comprising steps of waiting until the copy count value in the copy count register is zero and releasing a

pointer to a memory location of the outgoing datagram in the main memory (see para 0099 – 0100, where Kalkunte discusses if the recount reaches zero, the cell is put back into the free queue).

Consider claim 4, Kalkunte discloses a method as recited in claim 1, wherein the step of performing the lookup of the replicate count table comprises determining a pointer based on the group number and using that pointer as an index for the replicate count table to perform the lookup (see para 0092 and para 0099 – 0100, where Kalkunte discusses the pointer to the head cell of the packet and the LLA keeps a reference counter for each cell).

Consider claim 5, Kalkunte discloses a method as recited in claim 4, wherein the step of sending the outgoing datagram comprises: reading a first portion of the datagram from the main memory (see para 0076); sending the first portion, along with the copy count value and the pointer, to the egress port (see para 0037, 0078 and 0099); continuing to read and send subsequent portions of the datagram until a last portion is read (see abstract, para 0071, and 0076, where Kalkunte discusses register/counter read/writes); and decrementing the copy count value in the copy count register (see para 0100, 0180, where Kalkunte discusses decrementing the reference count).

Consider claims 6, Leung discloses wherein the step of modifying the VLAN identifier of the outgoing datagram comprises accessing a VLAN ID table using the pointer as an index to obtain a new VLAN identifier (see col. 2 lines 28 – 32 lines 34 – 38, where Leung discusses VLAN tag is inserted/stripped/modified).

Consider claim 7, Kalkunte discloses a method as recited in claim 6, wherein the new VLAN identifier is obtained from a bit value in an entry in the VLAN ID table provided by the

pointer, where the bit value is equal to the copy count value (see para 0041 - 0042, where Kalkunte discusses VLAN ID is used to indicate all the ports the packet is supposed to be delivered with a table for each port).

Consider claim 8, Kalkunte discloses a network device for handling datagrams in a network, comprising: a main memory (see para 0065, where Kalkunte discusses a RAM). Kalkunte discloses a memory management unit; determining means for determining whether a scheduled outgoing datagram stored in the main memory is a multicast (MC) datagram (see para 0013, para 0035, para 0044, para 0059 and para 0061, where Kalkunte discusses the fabric effectively manages multicast traffic). Kalkunte discloses performing means for performing a lookup of a replicate count table to determine a copy count value and writing the copy count value to a copy count register (see para 0011 and para 0078, where Kalkunte discusses each Egress keeps a counter to keep tracks of bytes being sent out). Kalkunte discloses awaiting means for awaiting a ready signal from an egress port of the network switch (see para 0011, para 0013 and para 0037, where Kalkunte discusses the incoming data packet is forwarded based on the egress port bitmap). Kalkunte discloses sending the outgoing datagram to the egress port from the main memory along with the copy count value (see para 0037, para 0046, para 0078 and para 0131, where Kalkunte discusses forwarding the packet to the egress port and the LLA maintains reference counters). Kalkunte discloses changing means for changing the copy count value in the copy count register (see para 0053 - 0054, where Kalkunte discusses the counter is updated). Kalkunte discloses forwarding means for forwarding the outgoing datagram from the egress port (see para 0077 - 0078, where Kalkunte discusses each egress keeps track of how many bytes have been send out for packets that came from other ports).

Kalkunte does not specifically disclose modifying a VLAN identifier of the outgoing datagram and wherein the performing, awaiting, sending, changing, modifying and forwarding means are configured to be activated when the scheduled outgoing datagram type is the MC datagram. Leung teaches modifying a VLAN tag and inserting/stripping the Device ID when reassembling the data read from memory (see abstract and col. 2 lines 10 - 20, where Leung discusses modifying a VLAN tag).

It would have been obvious to one ordinary skilled in the art at the time the invention was made to modify the invention of Kalkunte, and modify a VLAN tag, as taught by Leung, thus a need to provide a method and mechanism for enabling VLAN tag insertion/stripping/modification as discussed by Leung (see col. 1 lines 50 - 55).

Consider claim 9, Kalkunte discloses a network device as recited in claim 8, further comprising suspending means for suspending a replication operation of the memory management unit based on a presence of a higher-priority outgoing datagram (see para 0173 and para 0178, where Kalkunte discusses allowing higher priority packets to egress before lower priority queues).

Consider claim 10, Kalkunte discloses a network device as recited in claim 8, further comprising waiting means for waiting until the copy count value in the copy count register is zero and releasing means for releasing a pointer to a memory location of the outgoing datagram in the main memory (see para 0099 – 0100, where Kalkunte discusses if the recount reaches zero, the cell is put back into the free queue).

Consider claim 11, Kalkunte discloses a network device as recited in claim 8, wherein the performing means comprises second determining means for determining a pointer based on the

group number and implementing means for implementing that pointer as an index for the replicate count table to perform the lookup (see para 0092 and para 0099 – 0100, where Kalkunte discusses the pointer to the head cell of the packet and the LLA keeps a reference counter for each cell).

Consider claim 12, Kalkunte discloses a network device as recited in claim 11, wherein the sending means comprises: reading means for reading a first portion of the datagram from the main memory (see para 0076); second sending means for sending the first portion, along with the copy count value and the pointer, to the egress port (see para 0037, 0078 and 0099); and decrementing means for decrementing the copy count value in the copy count register (see para 0100, 0180); wherein the reading and second sending means are configured to continue to read and send subsequent portions of the datagram until a last portion is read (see abstract, para 0071, and 0076).

Consider claim 13, Leung discloses a network device as recited in claim 11, wherein the modifying means comprises accessing means for accessing a VLAN ID table using the pointer as an index to obtain a new VLAN identifier (see abstract, where Leung discusses modifying a VLAN tag).

Consider claim 14, Leung discloses a network device as recited in claim 13, wherein the new VLAN identifier is obtained from a bit value in an entry in the VLAN ID table provided by the pointer, where the bit value is equal to the copy count value (see col. 1 lines 35 – 40, where Leung discusses VLAN tag needs to be changed).

Consider claim 15. A network device for handling datagrams, comprising: at least one data port interface, said at least one data port interface supporting a plurality of data ports

transmitting and receiving datagrams (see Fig. 1 and para 0012, where Kalkunte discusses forwarding data in a network switch fabric). Kalkunte discloses a memory management unit, in communication with said at least one data port interface; and a main memory, said main memory communicating with said at least one data port interface and controlled by the memory management unit; wherein the memory management unit is configured to determine whether a scheduled outgoing datagram stored in the main memory is a multicast (MC) datagram; wherein when the scheduled outgoing datagram is of a type that is the MC datagram (see Fig. 3, para 0013, 0035, 0044, 0046, 0059, 0061 and 0065, where Kalkunte discusses the fabric effectively manages multicast traffic). Kalkunte discloses the memory management unit is configured to perform a lookup of a replicate count table to determine a copy count value (see para 0011; where Kalkunte discusses lookup in a forwarding table). Kalkunte discloses configured to write the copy count value to a copy count register, configured to send the outgoing datagram to the egress port from the main memory along with the copy count value, configured to change the copy count value in the copy count register (see para 0037, para 0046, para 0078 and para 0131, where Kalkunte discusses forwarding the packet to the egress port and the LLA maintains reference counters). Kalkunte discloses forwarding the outgoing datagram from the egress port (see para 0077 - 0078, where Kalkunte discusses each egress keeps track of how many bytes have been send out for packets that came from other ports).

Kalkunte does not specifically disclose modifying a VLAN identifier of the outgoing datagram. Leung teaches modifying a VLAN tag (see abstract, where Leung discusses modifying a VLAN tag).

It would have been obvious to one ordinary skilled in the art at the time the invention was made to modify the invention of Kalkunte, and modify a VLAN tag, as taught by Leung, thus a need to provide a method and mechanism for enabling VLAN tag insertion/stripping/modification as discussed by Leung (see col. 1 lines 50 - 55).

Consider claim 16, Kalkunte discloses a network device as recited in claim 15, wherein the memory management unit is configured to suspend the replication of the outgoing datagram based on a presence of a higher-priority outgoing datagram (see para 0173 and para 0178, where Kalkunte discusses allowing higher priority packets to egress before lower priority queues).

Consider claim 17, Kalkune discloses a network device as recited in claim 15, wherein the memory management unit is configured to wait until the copy count value in the copy count register is zero before releasing a pointer to a memory location of the outgoing datagram in the main memory (see para 0099 -- 0100, where Kalkunte discusses if the recount reaches zero, the cell is put back into the free queue).

Consider claim 18, Kalkunte discloses a network device as recited in claim 17, wherein the memory management unit is configured to determine a pointer based on a group number and configured to implement that pointer as an index for the replicate count table to perform the lookup (see para 0092 and para 0099 – 0100, where Kalkunte discusses the pointer to the head cell of the packet and the LLA keeps a reference counter for each cell).

Conclusion

3. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Farinacci et al (6,611,528) disclose routers for routing multicast packets and

maintaining routing information. Kobayashi (US 6,567,851) discloses a multicast session management device to avoid duplicate use of the same multicast address. Jain et al (US 6,614,787) disclose a method and system for preventing unnecessary replication of multicast packets in VLAN. Alowersson et al (US 6,625,151) disclose adaptation of ports to detect multicasting packets. Xu et al (US 6,765,907) disclose determining if the source network address of the multicast packet is identical to an entry in a table and discarding it if it's in the table. Boivie et al (US 6,625,773) disclose a protocol to indicate to routers for multicasting packets. Suzuki (US 6,735,177) discloses storing a table in each node for containing distances between each of the multicast communication nodes. Wesley et al (US 6,693,907) discloses receivers with counters for counting the number of times multicast packets have been transmitted and retransmitted. Brown (US 6,754,211) discloses a method and apparatus for forwarding IP multicast.

4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Anh Ngoc Nguyen whose telephone number is 5712705139. The examiner can normally be reached from 8AM to 4PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nick Corsaro can be reached on 5712727876. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Anh Ngoc Nguyen

NICK CORSARO
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600